Data sheet 6ES7414-3EM07-0AB0



SIMATIC S7-400, CPU 414-3 PN/DP Central processing unit with: Work memory 4 MB, (2 MB code, 2 MB data), interfaces 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5) 3rd interface IF 964-DP plug-in (IF1)

General information	
Product type designation	CPU 414-3 PN/DP
HW functional status	01
Firmware version	V7.0
Product function	
 Isochronous mode 	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher with HSP 262
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	15 µs
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.3 A
from backplane bus 5 V DC, max.	1.6 A
from backplane bus 24 V DC, max.	300 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At each DP interface
Power loss	
Power loss, typ.	6.5 W
Power loss, max.	8 W
Memory	
Type of memory	RAM
Work memory	
integrated	4 Mbyte
integrated (for program)	2 Mbyte
integrated (for data)	2 Mbyte
expandable	No
Load memory	
expandable FEPROM	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
integrated RAM, max.	512 kbyte
expandable RAM	Yes; with Memory Card (RAM)
expandable RAM, max.	64 Mbyte
Backup	
present	Yes
with battery	Yes; all data
without battery	No
Battery	

Backup battery	
Backup current, typ.	180 μA; up to 40 °C
Backup current, typ. Backup current, max.	850 μA
Backup time, max.	Dealt with in the module data manual with the secondary conditions and
	the factors of influence
Feeding of external backup voltage to CPU	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	18.75 ns
for word operations, typ.	18.75 ns
for fixed point arithmetic, typ.	18.75 ns
for floating point arithmetic, typ.	37.5 ns
CPU-blocks	
DB	
Number, max.	6 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	3 000; Number range: 0 to 7999
Size, max.	64 kbyte
FC	
Number, max.	3 000; Number range: 0 to 7999
Size, max.	64 kbyte
OB	
Number, max.	see instruction list
Size, max.	64 kbyte
 Number of free cycle OBs 	1; OB 1
 Number of time alarm OBs 	4; OB 10-13
 Number of delay alarm OBs 	4; OB 20-23
 Number of cyclic interrupt OBs 	4; OB 32, 33, 34, 35 (shortest cycle that can be set = 500 μs)
 Number of process alarm OBs 	4; OB 40-43
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	3; OB 61-63
 Number of multicomputing OBs 	1; OB 60
 Number of background OBs 	1; OB 90
Number of startup OBs	3; OB 100-102
Number of asynchronous error OBs	9; OB 80-88
 Number of synchronous error OBs 	2; OB 121, 122
Nesting depth	
per priority class	24
 additional within an error OB 	1
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
— upper limit	
• present	Yes
•	SFB
Type Number	
Number S7 times	Unlimited (limited only by RAM capacity)
S7 times	2.049
Number Petentivity	2 048
Retentivity	Von
— adjustable	Yes
— lower limit	0
— upper limit	2 047

Time range - lower limit - upper limit - upper limit - upper limit - yresent - Type - Remement - Yes - Number - Number of Clock memorise - Remembly available - Retentive data area (incl. timers, counters, flags), max - Retentive data area (incl. timers, counters, flags), max - Flag - Size, max - Retentively available - Retentively present - Retentive data in memory velocity present - Retentively present - Retentiv	procet	No times retentive
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Retentivity preset	•	
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Local data adjustable, max. preset 8 kbyte Address area I/O address area inputs 8 kbyte - Outputs 8 kbyte Process image inputs, adjustable 8 kbyte - Outputs, adjustable 8 kbyte - Outputs, adjustable 9 kbyte - Outputs, adjustable 9 kbyte - Outputs, default 256 byte - Outputs 4 byte - Outputs 4 byte - Outputs 4 byte - Outputs 65 536 - Outputs 4 096 - Outputs 5 63 - Multicomputing 7 yes; 4 CPUs max. (with UR1 or UR2) - Interface module 5		
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Number of DP masters • integrated • via CP • via IM 467 • Mixed mode IM + CP permitted • via interface module • via interface module • Number of pluggable S5 modules (via adapter capsule in central device), max. Number of IO Controllers	 Number of connectable IM 460s, max. 	6
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PROFINET IO mode • via interface module • Number of pluggable S5 modules (via adapter capsule in central device), max. Number of IO Controllers	• via IM 467	4
Number of pluggable S5 modules (via adapter capsule in central device), max. Number of IO Controllers 6	Mixed mode IM + CP permitted	
capsule in central device), max. Number of IO Controllers		1; IF 964-DP
		6
• integrated 1	Number of IO Controllers	
	• integrated	1

• via CP	4; Max. 4 in the central controller; no mixed operation of different CP
	443-1 types in PROFINET IO mode
Number of operable FMs and CPs (recommended)	
• FM	Limited by number of slots and number of connections
• CP, PtP	CP 440: Limited by number of slots; CP 441: Limited by number of slots and number of connections
 PROFIBUS and Ethernet CPs 	14; In total max. 10 CPs as DP master and PROFINET controller, of which up to 10 IMs or CPs as DP master and up to 4 CPs as PROFINET controller
Slots	
 required slots 	2
Time of day	
Clock	
 Hardware clock (real-time) 	Yes
 retentive and synchronizable 	Yes
 Resolution 	1 ms
 Deviation per day (buffered), max. 	1.7 s; Power off
Deviation per day (unbuffered), max.	8.6 s; For power On
Operating hours counter	
Number	16
 Number/Number range 	0 to 15
 Range of values 	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
Granularity	1 h
• retentive	Yes
Clock synchronization	
supported	Yes
to MPI, master	Yes
 to MPI, slave 	Yes
• to DP, master	Yes
to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
 on Ethernet via NTP 	Yes; As client
● to IF 964 DP	Yes
Time difference in system when synchronizing via	
• Ethernet, max.	10 ms
MPI, max.	200 ms
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
Number of other interfaces	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)
1. Interface	
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Interface types	
• RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	
• MPI	Yes
 PROFIBUS DP master 	Yes
PROFIBUS DP slave	Yes
MPI	
 Number of connections 	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
 Global data communication 	Yes

 S7 basic communication 	Yes
— S7 communication	Yes
 S7 communication, as client 	Yes
— S7 communication, as server	Yes
PROFIBUS DP master	
 Number of connections, max. 	16; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
 Transmission rate, max. 	12 Mbit/s
Number of DP slaves, max.	32
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
 Global data communication 	No
 S7 basic communication 	Yes
— S7 communication	Yes
 S7 communication, as client 	Yes
 S7 communication, as server 	Yes
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	Yes
Activation/deactivation of DP slaves	Yes
Direct data exchange (slave-to-slave communication)	Yes
communication) — DPV1	Voe
Address area	Yes
	2 kbyte
— Inputs, max.— Outputs, max.	
User data per DP slave	2 kbyte
— User data per DP slave, max.	244 byte
	244 byte
— Inputs, max.	
— Outputs, max. — Slots, max.	244 byte 244
— slots, max. — per slot, max.	128 byte
PROFIBUS DP slave	120 byte
Number of connections	16
GSD file	http://support.automation.siemens.com/WW/view/en/113652
Transmission rate, max.	12 Mbit/s
automatic baud rate search	No
Address area, max.	32; Virtual slots
User data per address area, max.	32 byte
— of which consistent, max.	32 byte
Services	0- w ₁ , c
— PG/OP communication	Yes; with interface active
— Routing	Yes; with interface active
Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
Direct data exchange (slave-to-slave)	No
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes

Change of IP address at runtime, supported With SFB104 "IP_CONF" Number of connection resources • RJ 45 (Ethernet) • Number of ports • Number of ports • Number of ports • Number of ports • Number of Device • PROFINET IO Controller • PROFINET IO Device • PROFIBUS DP master • PROFIBUS DP slave • PROFIBUS DP slave • Point-to-point connection • Web server • Point-to-point connection • Transmission rate, max. Services - PG/OP communication - S7 communication - S7 communication - Shared device - Prioritized startup - Number of IO devices with prioritized startup, max Of which In line, max Of which In line, max Number of IO Devices with IRT, max of which in line, max Number of Connectable IO Devices for RT, - Started Control In line, max Number of connectable IO Devices for RT, - Started Control In line, max Number of connectable IO Devices for RT, - Started Control In line, max Number of connectable IO Devices for RT, - Started Control In line, max Number of connectable IO Devices for RT, - Started Control In line, max Number of connectable IO Devices for RT, - Started Control In line, max Number of connectable IO Devices for RT,	ogram
Interface types RJ 45 (Ethernet) Number of ports Integrated switch Protocols PROFINET IO Controller PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP slave PROFIBUS DP slave PROFIDUS DP slave Point-to-point connection Mo Media redundancy PROFINET IO Controller Transmission rate, max. Services PC/C/P communication Yes PSOFINET IO Controller Transmission rate max. Services PC/C/P communication Yes PROFINET IO Controller Transmission rate max. Services PC/C/P communication Yes PROFINET IO Controller Transmission rate max. Services PC/C/P communication Yes Profitized startup Shared device Prioritized startup Number of IO devices with prioritized startup, max. Number of IO devices with prioritized startup, max. Of which in line, max. Of which in line, max. Number of IO Devices with IRT, max. 64 Number of IO Devices with IRT and the option Pligh flexibility' Of which in line, max. Humber of Connectable IO Devices for RT, 65 66 61 Number of connectable IO Devices for RT, 9256	
RJ 45 (Ethernet) Number of ports integrated switch PROFINET IO Controller PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP master PROFILE Communication Web server Point-to-point connection Media redundancy PROFINET IO Controller Transmission rate, max. Services PROFO communication Yes PROFINET IO Controller Transmission rate, max. Services PROFIOR communication Yes Profit controller Transmission rate, max. Services PROFINET IO Controller Transmission rate, max. Services PROFINET IO Controller Transmission rate, max. Services PROFINET IO Controller Transmission rate, max. Services 256 PROFINET IO Controller Transmission rate, max. Services 100 Mbit/s Services 10	
 Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device PROFINET CBA PROFIBUS DP master No PROFIBUS DP slave Open IE communication Web server Point-to-point connection Mo Media redundancy Transmission rate, max. Services — PG/OP communication Yes Services — PG/OP communication Yes PS only with IRT and the High Performance option Yes No with IRT and the High Performance option Yes — Number of connectable IO Devices, max. — Of which in line, max. — Number of connectable IO Devices for RT, 61 Number of connectable IO Devices for RT, 256 	
integrated switch Protocols PROFINET IO Controller PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP slave Open IE communication Web server Point-to-point connection Media redundancy PROFIDET IO Controller Transmission rate, max. PROFIOP communication Yes PROFINET IO Controller Transmission rate device PSoftom Web server PSoftom Web server Transmission rate max. PG/OP communication Yes PROFINET IO Controller Transmission rate max. Services PG/OP communication Yes Profitized startup Shared device Prioritized startup Number of IO devices with prioritized startup, max. Number of connectable IO Devices, max. Of which In line, max. Of which in line, max. Number of IO Devices with IRT and the option Nigh flexibility Of which In line, max. Number of connectable IO Devices for RT, 61 Number of connectable IO Devices for RT,	
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 PROFIBUS DP slave Open IE communication Web server Point-to-point connection Media redundancy PROFINET IO Controller Transmission rate, max. PG/OP communication Services — PG/OP communication — S7 communication — S7 communication — Shared device — Prioritized startup — Number of IO devices with prioritized startup, max. — Number of connectable IO Devices, max. — Of which in line, max. — Number of IO Devices with IRT and the option "high flexibility" — of which in line, max. — Number of connectable IO Devices for RT, 256 	
 Open IE communication Web server Point-to-point connection Media redundancy Media redundancy Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication S7 communication Yes Isochronous mode Shared device Prioritized startup Number of IO devices with prioritized startup, max. Number of connectable IO Devices, max. Of which IO devices with IRT, max. Of which in line, max. Number of IO Devices with IRT and the option "high flexibility" of which in line, max. Number of connectable IO Devices for RT, 256 	
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PROFINET IO Controller ◆ Transmission rate, max. 100 Mbit/s Services - PG/OP communication Yes - S7 communication Yes; Only with IRT and the High Performance option - Shared device Yes - Prioritized startup Yes - Number of IO devices with prioritized startup, max Number of connectable IO Devices, max. 256 - Of which IO devices with IRT, max. 64 - of which in line, max. 64 - Number of IO Devices with IRT and the option high flexibility" - of which in line, max. 61 - Number of connectable IO Devices for RT, 256	
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 — of which in line, max. — Number of connectable IO Devices for RT, 256 	
· ·	
max.	
— of which in line, max. 256	
— Activation/deactivation of IO Devices Yes	
— Number of IO Devices that can be simultaneously activated/deactivated, max.	
— IO Devices changing during operation (partner ports), supported	
 Number of IO Devices per tool, max. 8; 8 parallel calls of the SFC 12 "D_ACT_DP" possible per line IO Devices changing during operation (partner ports) are support 	
— Device replacement without swap medium Yes	
— Send cycles 250 μ s, 500 μ s, 1 ms, 2 ms, 4 ms additionally with IRT with hig performance: 250 μ s to 4 ms in 125 μ s frame	1
 Updating time 250 µs to 512 ms; minimum value depends on preset commun share for PROFINET IO, on the number of IO Devices and on t amount of configured user data, see PROFINET system descri 	he
Address area	
— Inputs, max. 8 kbyte	
— Outputs, max. 8 kbyte	
— User data consistency, max. 1 024 byte	
PROFINET IO Device	
Services	
— PG/OP communication Yes	
— PG/OP communication Yes — S7 communication Yes	
— Isochronous mode No	
— IRT Yes	
— Prioritized startup Yes Van	
— Shared device Yes	
— Number of IO Controllers with shared device,max.	

- /	
Transfer memory	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
— User data per submodule, max.	1 024 byte
PROFINET CBA	
 acyclic transmission 	Yes
cyclic transmission	Yes
Open IE communication	
 Number of connections, max. 	62
 Local port numbers used at the system end 	0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532, 65533,
	65534, 65535
Keep-alive function, supported	Yes
3. Interface	
Interface type	Pluggable interface module (IF)
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Isolated	Yes
automatic detection of transmission rate	No
Number of connection resources	16
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	150 mA
Protocols	
• MPI	No
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP master	165
Number of connections, max.	16
Transmission rate, max.	12 Mbit/s
	96
Number of DP slaves, max.	90
Services	V
— PG/OP communication	Yes
— Routing	Yes; S7 routing
Global data communication	No
 S7 basic communication 	Yes
— S7 communication	Yes
 S7 communication, as client 	Yes
 S7 communication, as server 	Yes
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 Direct data exchange (slave-to-slave 	Yes
communication)	
— DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	6 kbyte
— Outputs, max.	6 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
Number of connections	16
GSD file	http://support.automation.siemens.com/WW/view/en/113652
Transmission rate, max.	12 Mbit/s
■ Hansinission fale, max.	12 IVIUIUS

automatic baud rate search	No
Address area, max.	32; Virtual slots
 User data per address area, max. 	32 byte
— of which consistent, max.	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; with interface active
 Global data communication 	No
 S7 basic communication 	No
— S7 communication	Yes
 S7 communication, as client 	Yes
 S7 communication, as server 	Yes
 Direct data exchange (slave-to-slave 	No
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
Redundancy mode	
Media redundancy	
Switchover time on line break, typ.	200 ms
Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. 	62
— Data length, max.	32 kbyte
several passive connections per port,	Yes
supported	100
• ISO-on-TCP (RFC1006)	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs
 Number of connections, max. 	62
— Data length, max.	32 kbyte; 1 452 bytes via CP 443-1 Adv.
• UDP	Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. 	62
— Data length, max.	1 472 byte
Web server	
• supported	Yes
User-defined websites	Yes
Number of HTTP clients	5
Isochronous mode	
Equidistance	Yes
Number of DP masters with isochronous mode	2
User data per isochronous slave, max.	244 byte
shortest clock pulse	1 ms; 0.5 ms without use of SFC 126, 127
max. cycle	32 ms
communication functions / header	
PG/OP communication	Yes
Number of connectable OPs without message processing	63
Number of connectable OPs with message processing	63; When using Alarm_S/SQ and Alarm_D/DQ
Data record routing	Yes
Global data communication	
• supported	Yes
 Number of GD loops, max. 	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	16
 Size of GD packets, max. 	54 byte

Size of GD packet (of which consistent), max.	1 variable
S7 basic communication	
• supported	Yes
 User data per job, max. 	76 byte
User data per job (of which consistent), max.	1 variable
S7 communication	
supported	Yes
• as server	Yes
• as client	Yes
 User data per job, max. 	64 kbyte
User data per job (of which consistent), max.	462 byte; 1 variable
S5 compatible communication	
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
User data per job, max.	8 kbyte
User data per job (of which consistent), max.	240 byte
 Number of simultaneous AG-SEND/AG-RECV orders per CPU, max. 	24/24
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
communication functions / PROFINET CBA (with set target of	
Setpoint for the CPU communication load	20 %
Number of remote interconnection partners	32
Number of functions, master/slave	150
Total of all master/slave connections	4 500
Data length of all incoming connections	45 000 byte
master/slave, max.	
 Data length of all outgoing connections master/slave, max. 	45 000 byte
 Number of device-internal and PROFIBUS interconnections 	1 000
 Data length of device-internal und PROFIBUS interconnections, max. 	16 000 byte
Data length per connection, max.	2 000 byte
performance data / PROFINET CBA / remote interconne	·
— Sampling interval, min.	200 ms; Depending on preset communication load, number of interconnections and data length used
Number of incoming interconnections	250
Number of outgoing interconnections	250
Data length of all incoming interconnections, max.	8 000 byte
Data length of all outgoing interconnections, max. Peta length per separation, max.	8 000 byte
— Data length per connection, max.	2 000 byte
performance data / PROFINET CBA / remote interconne	1 ms; Depending on preset communication load, number of
 Transmission frequency: Transmission interval, min. 	interconnections and data length used
Number of incoming interconnections	300
Number of outgoing interconnections	300
Data length of all incoming interconnections, max.	4 800 byte
 Data length of all outgoing interconnections, max. 	4 800 byte
 Data length per connection, max. 	450 byte
performance data / PROFINET CBA / HMI variables via	PROFINET / acyclic / header
 Number of stations that can log on for HMI variables (PN OPC/iMap) 	2x PN OPC/1x iMap
 HMI variable updating 	500 ms
 Number of HMI variables 	1 000
 Data length of all HMI variables, max. 	32 000 byte
performance data / PROFINET CBA / PROFIBUS proxy	functionality / header
— supported	Yes; 32 PROFIBUS slaves max. connectable
Data length per connection, max.	240 byte; Slave-dependent
Number of connections	

• overall	64
usable for PG communication	63
— reserved for PG communication	1
adjustable for PG communication, max.	0
usable for OP communication	63
reserved for OP communication	1
— adjustable for OP communication, max.	0
usable for S7 basic communication	62
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, max. 	0
usable for S7 communication	62
 reserved for S7 communication 	0
 adjustable for S7 communication, max. 	0
usable for routing	31
— reserved for routing	0
 adjustable for routing, max. 	0
S7 message functions	
Number of login stations for message functions, max.	63; Max. 63 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with
	Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
Number of instances for alarm 8 and S7 communication blocks, max.	1 200
communication blocks, max.	300
preset, max. Process control messages	Yes
Process control messages Number of archives that can log on simultaneously (SFB	16
37 AR_SEND)	10
Number of messages	
• overall, max.	512
● in 100 ms grid, max.	128
• in 500 ms grid, max.	256
● in 1000 ms grid, max.	512
Number of additional values	
• with 100 ms grid, max.	1
• with 500, 1000 ms grid, max.	10
Test commissioning functions	
Status block	Yes; Up to 16 simultaneously
Single step	Yes
Number of breakpoints	16
Status/control	
 Status/control variable 	Yes; Up to 16 variable tables
 Variables 	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of variables, max.	70; Status/control
Forcing	
Forcing	Yes
Forcing, variables	Inputs/outputs, bit memories, distributed I/Os
Number of variables, max.	256
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	3 200
— adjustable	Yes
— preset	120
Service data	
• can be read out	Yes
Standards, approvals, certificates	
CE mark	Yes

CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
• ATEX	ATEX II 3G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes
configuration / programming / header	
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
System functions (circl) System function blocks (SFB)	see instruction list
Programming language	See manualion not
— LAD	Yes
— FBD	Yes
— STL	Yes
— STL — SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
configuration / programming / number of simultaneously	
— DPSYC_FR	2; SFC 11; per interface
— D_ACT_DP	8; SFC 12; per interface
— RD_REC	8; SFC 59; per interface
— WR_REC	8; SFC 58; per interface
— WR_PARM	8; SFC 55; per interface
— PARM_MOD	1; SFC 57; per interface
— WR_DPARM	2; SFC 56; per interface
— DPNRM_DG	8; SFC 13; per interface
— RDSYSST	8; SFC 51
— DP_TOPOL	1; SFC 103; per interface
configuration / programming / number of simultaneously	
— RDREC	8; SFB 52; per interface, but not more than 32 across all external interfaces
— WRREC	8; SFB 53; per interface, but not more than 32 across all external interfaces
Know-how protection	
 User program protection/password protection 	Yes
 Block encryption 	Yes; With S7 block Privacy
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	900 g
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